SIENA

USER

GUIDE

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Duria Masters Course 2008-2010

Contents

Introduction

This user guide was created because there was a need for a reference tool which could be used to support Module 9 of the Duria Masters course, 2008-2010.

It is designed to be a useful tool for those who are using SIENA for the first time, however it was not created with the intention of establishing a single approach to using this tool, instead it offers just one of many approaches that can be adopted.

It is designed to help novice users, therefore a more complex user guide will be needed by anyone wishing to develop advanced SIENA skills.

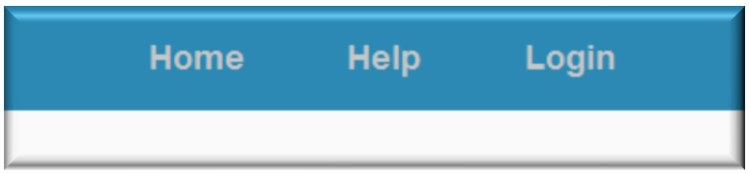
Dedicated to all those who use SIENA to improve diversity for students

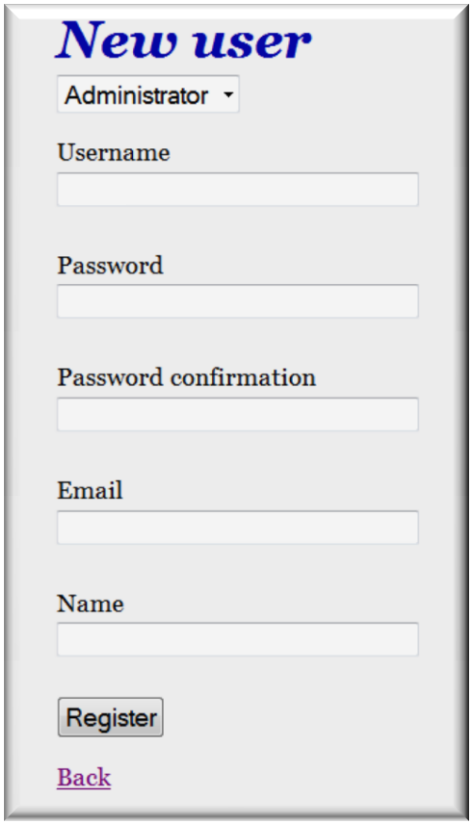
(Jesús Alonso)

How to register users in SIENA

SIENA users are classified as either: '**Professor', 'Student' or 'Administrator'**.

To access the Registration Area, select 'Login' from the toolbar located at the top of your screen, then 'Register' which is located at the bottom of the page.





Once selected, the following box will appear:

Step 1: Start by choosing the type of user you want to create.

Step 2: Create a username which must not include any spaces.

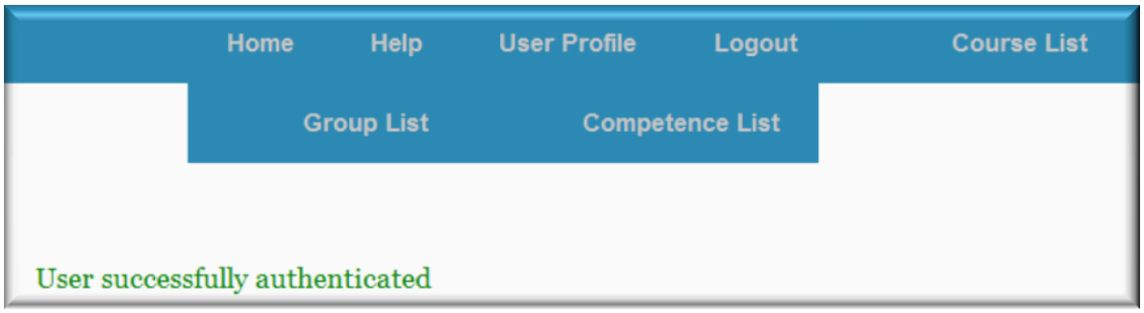
Step 3: Enter a password in the text field below, and re-enter the same password in the text field below that. Finally, enter the full name of the user, including spaces, in the last field in the list.

Step 4: Select '**Register'** to complete the process.

You can request to be registered as any type of user, however you will not be able to use SIENA until an Administrator authorises your registration.

“Professor” menu options

A larger menu than the one seen during registration will appear in the toolbar located in the upper part of the screen:



Description of menu items

User profile

If you need to modify the user’s profile you should do it in this section. The text fields are quite clear.

Course List

In this section of the menu you can see the different courses that have been created for students by the professor. We will go into more detail about how to construct this later on, for the moment let’s look at the screen grab.

You will see a list of courses, and an option which allows you to filter the list. Enter the search characteristics into the ‘**Name’** field, and select the following icon to activate the filter: 

If you want to clear you search, then click on this icon. 

For practice purposes, select a course and click on '**Enroll**'. Click on the 'View' option which appears and explore the content of the course. By doing this, you better understand the construction process that is explained further on.

Group List

You will use this section to create student groups. It is a powerful tool for meeting the needs of student diversity.

There are different ways of forming groups which will allow you to assign specific tasks to specific students who you have previously grouped together.

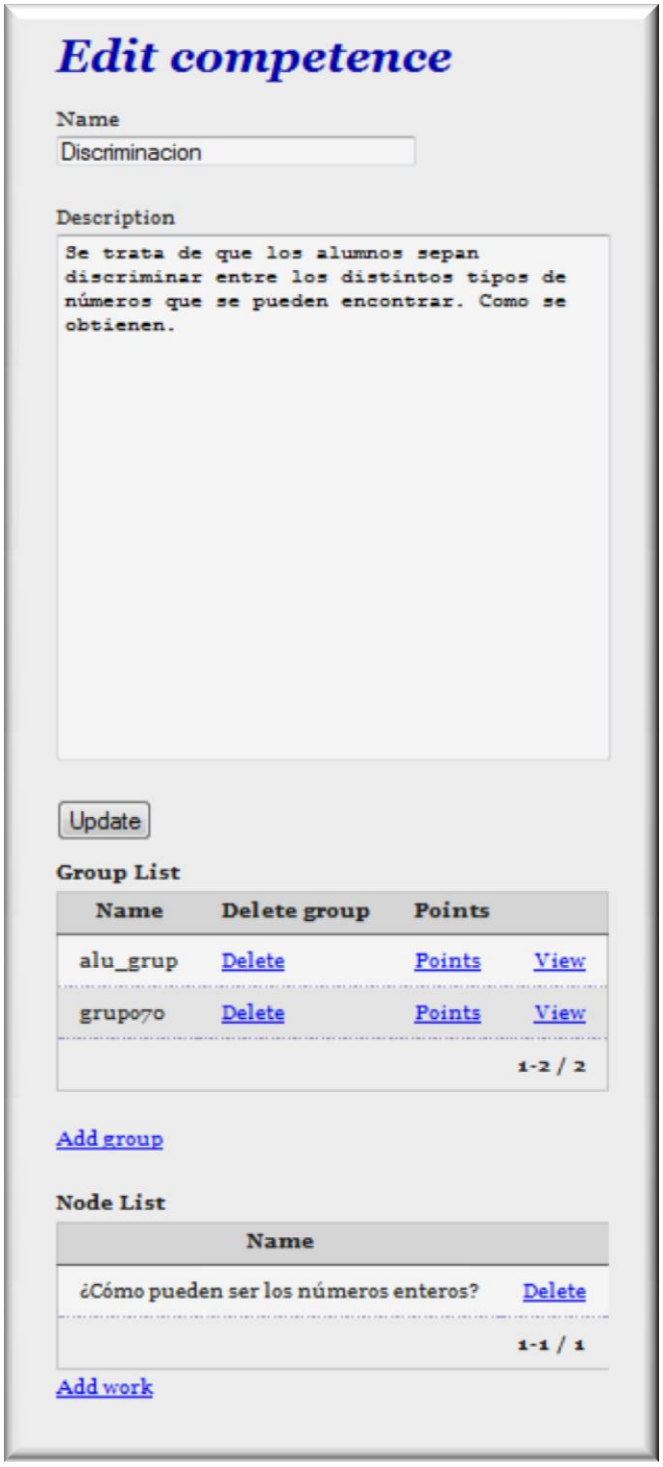
In this section you can create new groups by clicking on '**New group**'; view groups to check which students compose each group; edit groups in order to add new students; and you can also delete content should you need to eliminate a previously created group.

Competence List

Competence List:

In this section you can add the competencies you want your students to develop.

Before you can assign a competency to a student you will have to ensure they are included in a group.



Edit competency:

The '**View'** and '**Delete'** options are self explanatory.

The '**Edit**' option allows you to add groups so that the students in that group develop the competencies selected.

You can also assign new tasks to the selected groups via the option '**Add work'**.

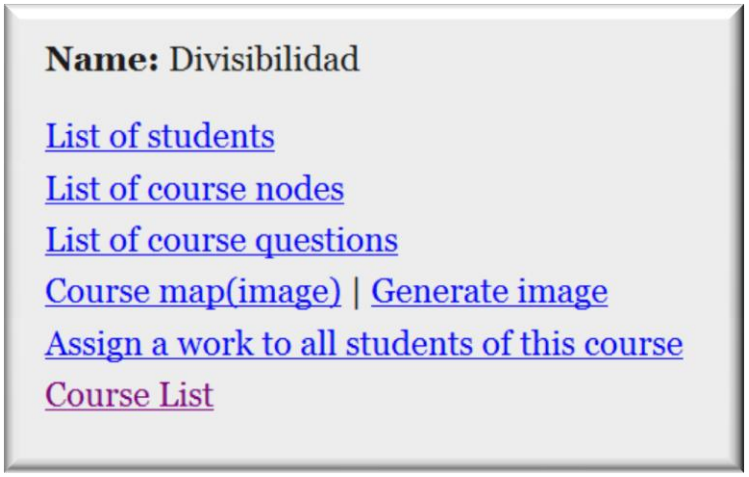
In the '**Description**' field you must include a detailed description of the skills students are expected to develop, by this we mean the competence or sub-competence that the student is expected to obtain.

Creating a course

The 'professor' cannot create a course. If you want to then you will need to contact a SIENA Administrator and supply them with the course name. Once the Administrator has set up and activated the course the professor can then start to manipulate it.

Course description

After accessing the '**Course List**', select the course that the Administrator was asked to set up, for example's sake, let's use the course *Divisibility.* Select *Divisibility.* The following menu will open:



The new course is empty - there are no associated students, no nodes to work on, no questions for the students, and no course map or image of the conceptual map. Do not worry, we will take a look at how to deal with each of these points later.

List of enrolled students

Before starting any work with the students it is important to remember that an Administrator will have to add the students into the system. For this reason, if you are a professor then you will have to ask the Administrator to add your students. You could direct also tell the students to contact the Administrator directly, but this will of course depend on any enrolment protocol that has been established beforehand.

Once a student has been added to the system s/he can then register for a course . They will be able to view a list of courses on the home page and enrol directly.

List of registered students (in *Divisibility)*: This section will allow you to view the students who are registered for a course, and there is also an option to view a list of the tasks that each one of them has been assigned.

In the '**Work list**' you can **'View', 'Delete'** and **'Edit'** tests, as well as assign new tasks to the students.

Here is a screen grab of a student's task list:

Pedro Cano Jiménez's work list for Divisibilidad

Node	Previous knowledge	
Múltiplos	0.5	View Edit Delete View tests
Divisores comunes de varios números	0.5	View Edit Delete View tests
Números primos	0.5	View Edit Delete View tests
Descomposición factorial	0.5	View Edit Delete View tests
Divisores	0.5	View Edit Delete View tests
Criterios de divisibilidad	0.5	View Edit Delete View tests
Números compuestos	0.5	View Edit Delete View tests
Relación de divisibilidad	0.5	View Edit Delete View tests
Múltiplos comunes de varios números	0.5	View Edit Delete View tests
Máximo Común Divisor	0.5	View Edit Delete View tests
Mínimo Común Múltiplo	0.5	View Edit Delete View tests

New work
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The '**View test**' option will allow you to view any text that the student has written, whether it has been finished **(true,** or on the contrary, **false),** and also the final grade awarded.

Test list

Creation date	Finished	Points	
23.03.2010	true	0.874	View Delete

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If you also want to view the content of the test click on the '**View**' link. You will then see a all of the information pertaining to the test which was taken - *the answer chosen for each question, if it was correct (value given - **'true'**), time taken, the question taken and the points previously gained.* Take a look at the following screen grab so you become familiar with this information:

Finished: true

Points: 0.874

Answer	Correct answer	Time left	Question	Points before
3	true	166	Mira atentamente el grupo de personas que se muestra en la imagen. ¿Podríamos decir que el número de personas que forman el grupo es múltiplo de 2?	0.500
3	true	223	Observa la siguiente tabla ¿cuántos múltiplos de 3 hay en ella?	0.545
3	true	408	¿Qué es un número compuesto?	0.742

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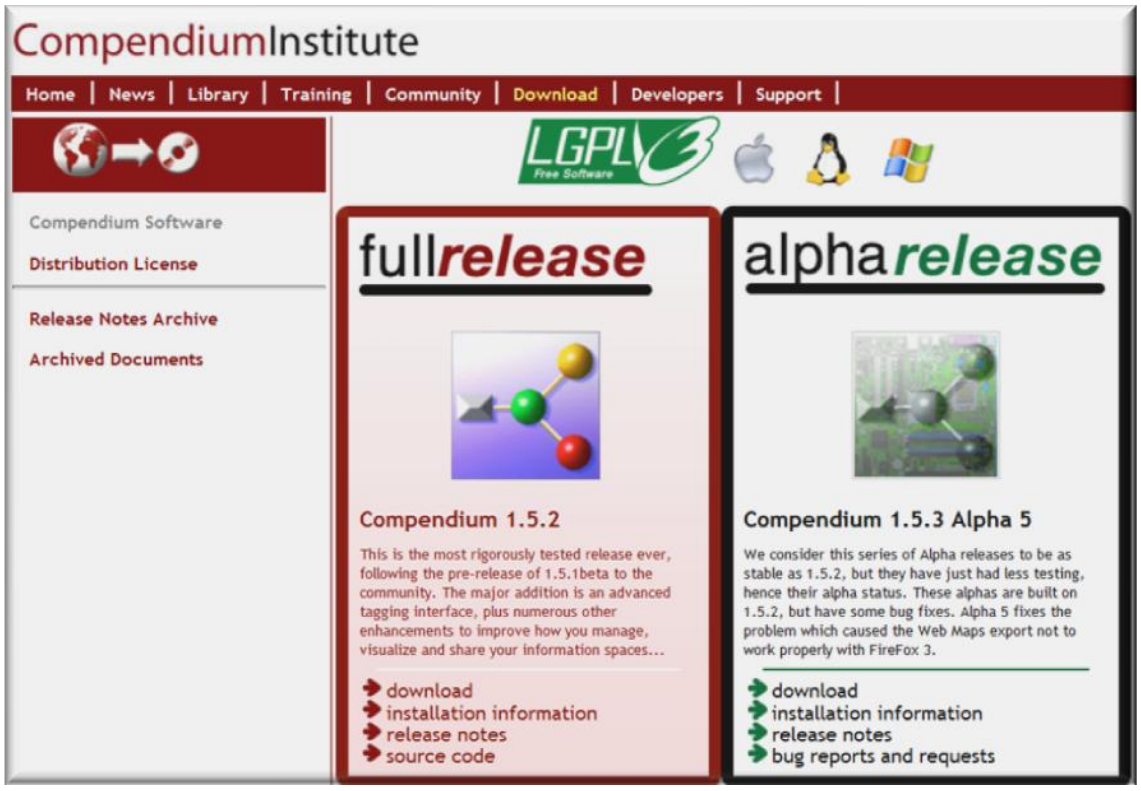
Course map

The course map consists of a collection of nodes that establish the knowledge, abilities, strategies or skills we want the students to develop.

It is essential to set up a hierarchical concept map before preparing a course (subject) in SIENA. That is to say, the highest-level nodes of the map are the most complex and the lowest-level nodes are the simplest. In order to reach the most complex nodes, the student must complete the simple low-level nodes of the concept map first.

Once you have designed the concept map, you will then have to prepare the information and questions that will be contained in each node. This content should be prepared in such a way so as to enhance students' performance. SIENA will then test the low-level or simplest nodes first and gradually work through to the highest or most complex nodes.

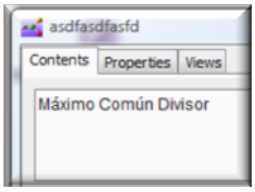
You will need to use *Compendium* to design the concept map. It can be downloaded from the following url: http://compendium.open.ac.uk/institute/download/download.htm. Click 'download' for version 1.5.2 or the latest version available under *'full**release**'*.



Creating nodes with Compendium

You can create a new node by simply clicking the left mouse button on the icon '**Node Note**' then without releasing it, drag and drop it into the map which is open on the right.

To name the node, right click on the icon and select the '**Contents**' tab, for example:



You can create as many nodes as you want by following this process.

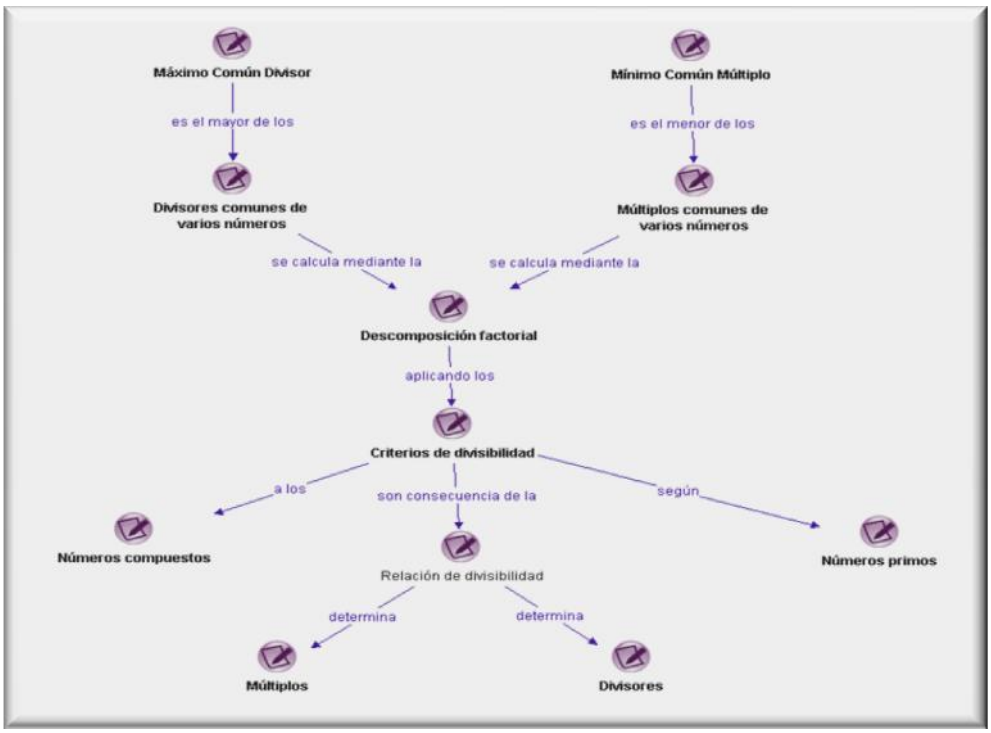
A quicker method is to left click just below the '**Node Note**' icon, this will open a text box which you can then fill in.

Linking nodes

If you want to link two nodes and add how each one relates to the other, simply right click on the first node and, without releasing it, drag it over to the second node. This will create the following image:

If you also want to add a comment between the nodes, by this we mean the connecting lines, then left click in the middle of the line at an equal distance from both nodes, this will open a text box where you will be able to write the relationship between the nodes. Having said that, these text boxes will not appear in SIENA, although at this stage they will be of use to the conceptual map designer.

Once the map is complete, it should look something like this:



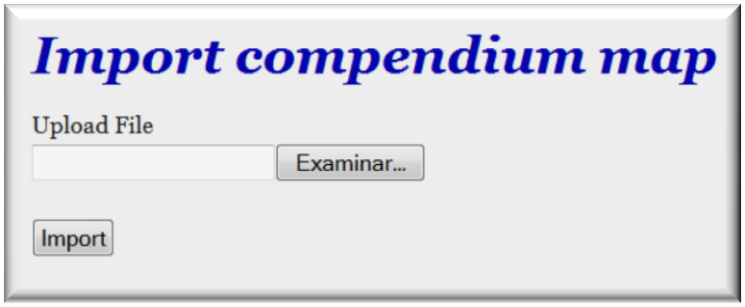
Exporting the conceptual map from Compendium into XML

Once the design stage of the concept map is complete you can export the map in XML by selecting [**File ➔ Export ➔ XML File].** Save the newly created XML file as you will need to use it in SIENA.

Importing the conceptual map into SIENA

The next step is to import the conceptual map that was created using *Compendium* into SIENA. To do this, open SIENA and select '**Course list**' from the main menu, then select "**View"** from the course which you want to import the compendium map for. Select **'Node list of course ...'** and at the bottom of the page you will see the option, '**Import Compendium map**'.

Once selected, the following information will appear:

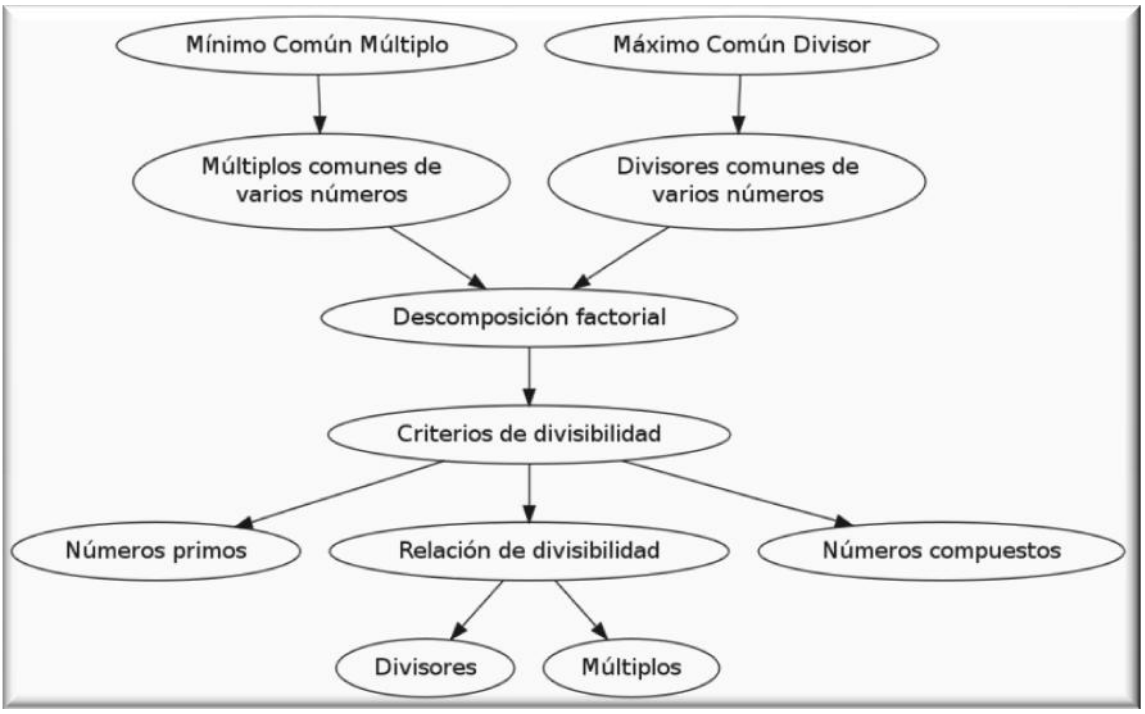


Click on '**Search' and select the .XML file which was created in** *Compendium.* Once you have done this, click on '**Import**'.

Generating an image of the conceptual map

After the map has been imported the next step involves generating an image of the conceptual map. To do this, you will need to return to the main menu and select '**Generate image**'. SIENA will then generate an image of the imported map. It will not ask for any prompts at this stage given that only one map is loaded into SIENA for a given course.

Example image:



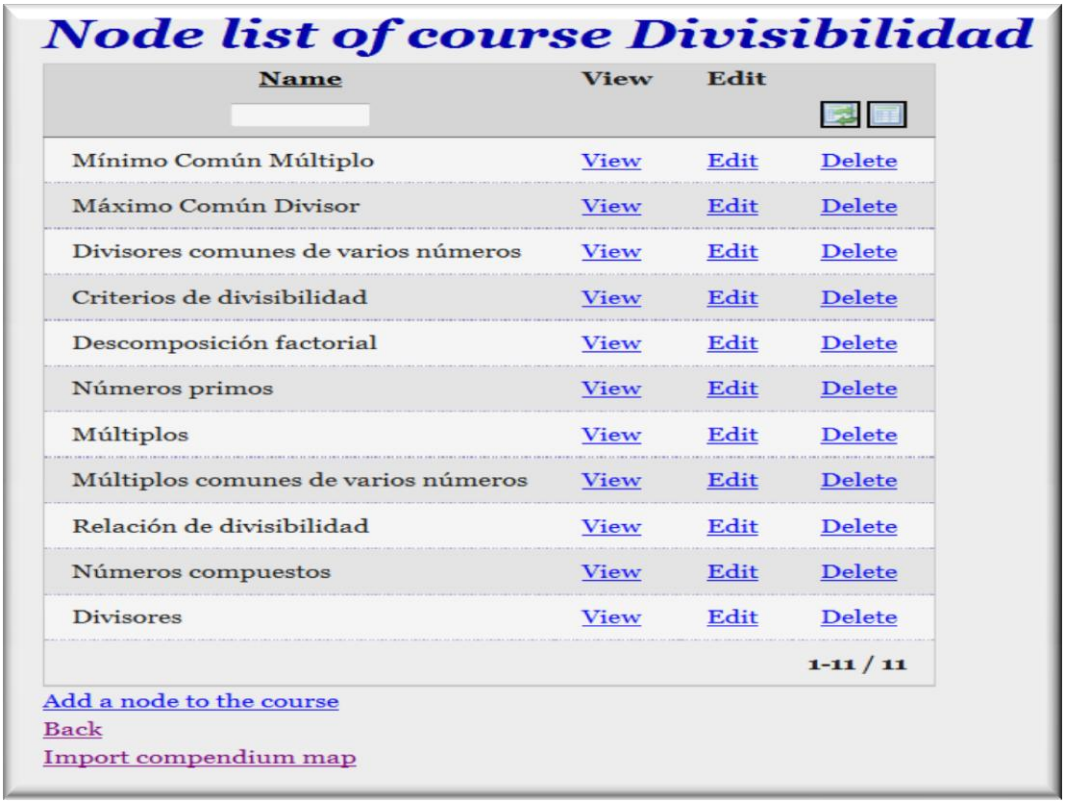
To view the image which has been generated, go to the main menu and select '**Course map** (image)'.

At the end of this process you will then be able to add content and questions to each of the individual nodes which will enable SIENA to test the students.

List of course nodes

Once the XML map has been imported into SIENA you will be able to access the list of nodes that SIENA has created.

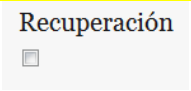
The 'List of course nodes' which is located in the main menu takes you to:



You can easily view, edit and delete nodes. The 'Edit' option will allow you to:

- Access the content description of any node
- Access the questions related to the node
- Add a new question to the node:
  This option will allow you to select the questions you want to ask in a test that are not yet associated to the node. You can also establish the correlation of dependency between the question and the node. This figure must be set between a range of 0 and 1, the higher the number the greater the connection between the questions and the node.
- View the list of successive nodes (those of a lower level)
- Add a new node **(es, edge_new_dest).**
  Don't worry if you want to set up a new connection between nodes after you have imported the XML file, you will be able to amend the conceptual map in SIENA without having to modify the *Compendium* file or repeat the *export – import* process. To set up the new connection, simply click on **(es, edge_new_dest)** which will allow you to select the node or nodes you consider to be relevant.
- View a list of preceding nodes (those of a higher level).
- Add a new preceding node **(es, edges_new_src)**. The process is the same as that described in the previous ly.
- View related content lists (information given to students about content delivered in the node so they can answer the test). You can view, edit and delete this content.
  To add items to the content list you will need to follow the steps mentioned below.
- Adding new content to the node.

When entering via the link previously mentioned you will see a page which contains a description of the new content. This could be the main page or equally the recuperation page.

In the second case, activate the recuperation check box. 

Once the text box is complete, select '**Create**'. This will reopen the dialogue box which contains the description and a new link - **(es, upload_file).**
This link will allow you to select the file containing content that you have previously prepared for the node. It also allows you to associate the file to the main content, or recuperation content that is presented to students when they do not pass the corresponding number of associated nodes.

List of course questions

To check the student has a good grasp of the node you should have designed an extensive range of questions that mobilise interconnected knowledge as well as underlying abilities and strategies.

To do this, you will need to create a group of questions of increasing difficulty for each node on the course map. These questions will need to activate different cognitive processes i.e. reproduction, connection and reflection. You can use the following support table to help you with this:

	Process	Description	Actions
Reproduction	**Access and Identification**	Represents the activity of remembering and recognising terminology, actions, and basic concepts in a given field and reproduce established formula.	Name, define, find, show, imitate, spell, list, count, remember, recognise, find, reproducte, tell.
	Comprehension	Involves actions such as grasping the meaning and intention of a text, specific languages and related codes, and be able to interprete them to resolve problems.	Explain, illustrate, extract, summerise, complete, translate into other terms, apply routines, select, choose.
Connection	**Application**	Involves demonstating the skills to select, transfer and apply information to resolve problems with a certain degree of abstraction and be able to accurately interviene in new situations.	Classify, resolve simple problems, construct, apply, choose, carry out, resolve, develop, interview, organise, link.
	Analysis and Evaluation	Reflects the possibility of examining and fragmenting information, finding causes and motives, infering and finding evidence which supports generalisations. Pairing up with responsibility.	Compare, contrast, demonstrate, experiment, plan, resolve complex problems, analyse, simplify, relate, infer, conclude.
Reflection	**Synthesis and Creation**	Involves compiling information and connecting it differently, establishing new patterns, discovering alternative solutions. Can associate with conflict resolution.	Combine, design, imagine, invent, plan, predict, propose, adapt, estimate.
	Judgement and Evaluation	Represents the ability to form judgements based on their own criteria, to question topics and present and substantiate opinions. It is also associated with complex planning, regulations, and negotiation.	Critique, conclude, decide, judge, recommend, establish criteria and/or limitations.

Obviously, it is very difficult to insert some reflective processes, and therefore relies on an astute professor to create a design which permits it.

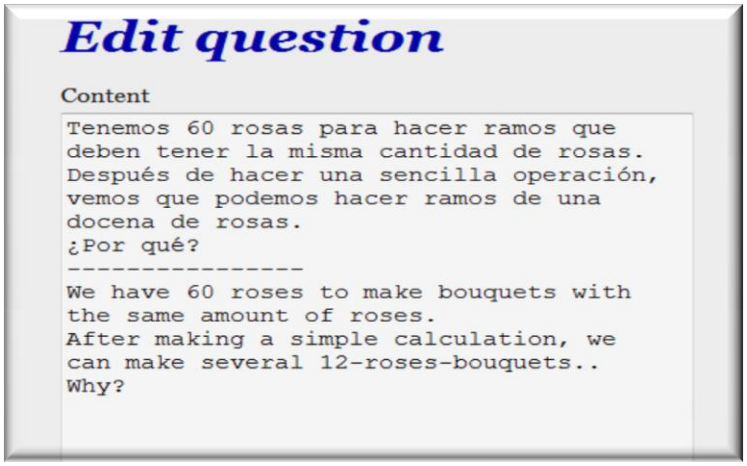
Accessing the list of questions

It is logical to think that the questions are taken within a given course. For this reason, you need to log into the course via the '**Course List**' link located in the main menu. You will then need to follow the '**Register**' link which corresponds to the newly created course, this will open the 'View' option. Select 'View' which will take you to a new menu. In the new menu you see 'List of course questions' in the third position.

Adding questions

Once in the '**List of course questions**' section, click on the link 'New question' which can be found on the lower half of the page.

You can now write the question in the content field. For example:



You should also include the question response time in seconds, and following that, include the number of the correct answer - minus one - in '**Correct answer**' field. For example, the student will be presented the following answers:

Because 6 is a multiple of 60.

Because 4 is a multiple of 60.

Because 5 is a multiple of 60.

The correct answer is the third answer, but because SIENA starts counting from ZERO the answer actually corresponds to the number **2**. For this reason, you will need to write **2** in the text field 'Correct answer', and not 3:

1. Because 6 is a multiple of 60. (*SIENA 0*)

2. Because 4 is a multiple of 60. (*SIENA 1*)

3. Because 5 is a multiple of 60. (*SIENA 2*)

The level of difficulty is represented by a figure reading between 0 and 1. The higher the figure, the more difficult the question.

Guessing is another coefficient represented by a figure between 0 and 1. It represents the probability of selecting the correct answer even when it is not known. In this case, you should include the result of dividing the unit by the number of possible answers: in the previous example this would be 1/3 or 0.33 *(Laplace Rule)*.

SIENA also allows you to present a file alongside the question . This is convenient if you want to include an image or other any other resource you consider necessary. This possibility is highly significant and extremely practical as it allows you to present discontinuous texts; the interpretation of graphs and

models; functional relationship searches; and to view spatial relationship between variables, etc.. We do not only come across this characteristic during the development of mathematic competencies, but also when understanding the environment and interacting with the world around us.

Viewing, Editing and Deleting questions

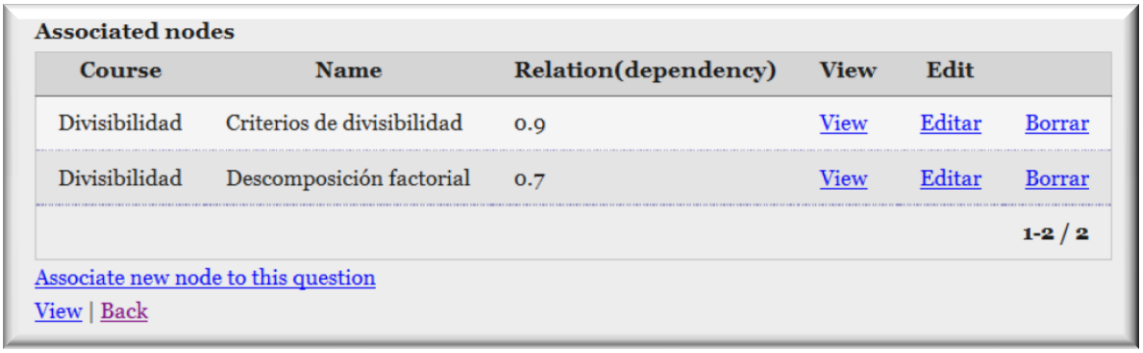
The following type of box will appear in the '**List of course questions**':

The 'View' option will allow you to access the question's content; the response time established for the question; the number of the correct answer; the level of difficulty, and the *guessing* coefficient.

It will also show the image which you uploaded for the question, and you will see the author of the question; the possible answers; related nodes; and the dependency coefficient between the question and the node/s. However, this option does not allow you to modify any of the parameters or characteristics mentioned.

The 'Edit' option, however, is a lot more dynamic. It will allow you to carry out the same actions as when you created a question. We should highlight that you can modify any of the question's parameters which may have been overlooked when it was first added to the test.

If you discover the question is related to more nodes than originally indicated, you can add the question to additional nodes via the link 'Associate new node to the question', which appears at the end of the page.



As you can see in the screen grab, you can also access the related nodes and either 'View', 'Edit' or 'Delete' them. This allows you to access the nodes directly without having to access them via a different menu.

It would be wise to review the dependency relation between the nodes and the question, this will allow SIENA to carry out a fully inter-connected test, otherwise some questions may not be asked. However, SIENA users should try to increase their understanding of the programme and experiment with different options in order to discover all of the programme's virtues.

Suggested design paths in SIENA

Including evaluation criteria

Definition: SIENA is a tool which is used to detect student's previous knowledge, and to assist them with self-study and self-evaluation (*Source:* http://siena.ull.es/).

A tool like this is useful for self-study when it allows a student to manage them self, be aware of their own mental processes, and, among other things, learn from their mistakes. Self-study includes two of the basic skills laid out in the Government's *Reales Decretos de Enseñanzas Mínimas (Royal Decrees for Basic Education)*: on one side you have the skill of learning how to learn, and on the other you have personal autonomy and individual initiative.

As such, assisting self-study entails making students aware of the expectations you have for them at all times. For this reason, it is important to describe what you want the student to achieve when completing each question, rather than just presenting them with a question & response formula. You should give them enough information so that they are aware of the level of training or achievement they will finally reach.

By explaining the evaluation criteria and enriching SIENA beforehand will lead to better self-management by students. Preparing rich, clear and at the same time varied content which includes the evaluation criteria serves to enrich the self-study and self-evaluation process.

Going solo to collaboration

Like all tools it can be used individually or in groups. We would recommend you to alternate between individual tests and group tests. A student working alone will go as far as the computer can take them in the *Zona de Desarrollo Próximo (ZDP)* (*Proximal Development Zone*).

By being able to work in peer-to-peer networks, (student-student), and over the computer network, the *Zona de Desarrollo Próximo (ZDP)* is expanded, and as such, the level of competence development is even greater.

By adding this communication between classmates, you will be adding the need to verbalise mental processes which in turn assists in the assimilation of knowledge, the creation of cognitive conflicts, and the reconstruction of knowledge and understanding.

The application of diverse resources

Supporting the question asked with real contextualised images will make add authenticity to a problem or task that has been set. Use a digital newspaper, an invoice, a ticket to see a show, a shopping receipt, a supermarket catalogue, etc… Just some of the options which should be kept in mind.

Test subjects

Normally, when designing questions for a test you try to ensure the test is rich, full of different stimuli, and stimulates different cognitive processes in a variety of contexts.

However, there is also exists the possibility of creating questions for a test from a single course, that is to say, from a large initial stimuli. Actually, the system is already being used in PISA evaluations to allow:

- A better understanding of what can be achieved if each question is introduced in a completely new context.
- More time to assimilate material which can later be used to evaluate diverse aspects of performance.

The context of question

The context should move from theory to real areas for each student. The recommendations of the *Common European Framework of Reference* (*CEFR*) are as follows:

Field	Places	Institutions	People	Objects	Events	Action	Texts
Personal	**Home**: individual's, family's, friends, stranger's	The family,	Parents, grandparents, children, siblings, aunts and uncles, cousins, in-laws, etc.	Furniture, decoration, clothes, domestic appliances, personal hygiene, artwork, books, pets, wild animals, trees, plants, gardens, ponds, personal property, bags, sports equipment, leisure equipment	Family events, reunions, inccidents, accidents, natural phenomena, celebrations, visits, walks, bike rides,motor bike rides, car rides, holidays, trips, sporting events	Daily routines, for example; getting dressed, getting undressed, cokking, eating, washing, DIY, gardening, reading, radio and television, hobbies, games and sporting activities	Teletext, garantees, recipes
	House: bedroom, garden, personal space in a hostel or hotel; the countryside, beach etc..	Fabric of society					Educational material, school books, novels, magazines, newspapers, flyers, publicity, personal letters, spoken texts, retransmitted and recorded
Public	Public spaces: street, square, park, etc. Public transport, shops, markets, hospitals, doctor's surgery, health centres, stadiums and sports centres, thatres, leisure centres, entertainment, restaurants, bars, hotel, prayer rooms	Public authorities, political institutions, the justice system, the public health service, diverse associations, NGOs, political parties, religious institutions, confessionals	Citizens, civil servants, shop assistants, police officers, security guards, drivers, inspectors, passengers, sportsmen, fans, spectators, actors, viewers, waiters, receptionists, secretaries, priests, congregation	Money, spare change, wallet, paperwork or official documents, merchandise, weapons, luggage, baggage, travel case, dances, prgrammes, meals, drinks, snacks, passports, permits	Inccidents, accidents, illness, public reunions, lawsuit, trials, lublic holiday, fines, arrests, parties, competitions, shows, weddings, funerals	Shopping and using public services, using healthcare services, car, train and boat journeys, air travel, leisure activities, religious services	Public statements and notices, labels and packaging, folders, murals, tickets, timetables, signs, regulations, programmes, contracts, menus, sacred texts, sermons, hymns, by-laws, public regulations, etc.
Professional	Offices, factories, workshops, ports, stations, aeroports, farms, warehouses, shops, etc. Service industries, hotels	Businesses, public services, multinationals, corporations, nationalized business, unions	Business owner, staff, management, friends, subordinates, work mates, clients, receptionists, secretaries, maintanence staff	Automated services, industrial machinery, industrial tools and craft tools.	Meetings, interviews, receptions, conferences, trade fairs, consultations, seasonal sales, workplace accidents, disputes at work	Business administration, industrial organisation, operations and production, administrative activities, sales agreements, commercial activity, sales, marketing, computing applications, office maintenance	Business letters, reports, security notes, instruction manuals, reagulations, publicity material, labels and packaging, job descriptions, postal signature, business cards
Educaitonal	Schools: hall, classrooms, playground, playing field, corridors, universities, conference rooms, seminars, student unions, colleges, laboratories, university cafeterias	Schools, faculties, universities, professional colleges, professional associations, life-long learning	Qualified teaching staff, teaching staff, educators, assistants, parents, classmates, professors, readers, students, librarians and laboratory assistants, dinner ladies, cleaners, handyman, secretaries, porters	School material, uniforms, sports equipment and sports kits, food, audio-visual material, blackboard and chalk, computers, rucksacks and satchel	Start of the course, enrolment, playtime, breaktime, visits and exhange programmes, parent-teacher meetings, sports day, matches, discipline problems	Assembly, lessons, games, playtime, associations and societies, conferences, essays, lab work, library work, seminars and tutorials, homework, individual work, debates and discussions	Authentic texts (like those previously mentioned), printed books, reference books, writing on the blackboard, printed text, text on a computer screen, video text, exercise books, newspaper articles, extracts, summaries, dictionaries

Multiple answers

For the time being, SIENA has been designed to allow just one correct answer. This closes the door on the possibility of asking open questions which are ideal for encouraging cognitive conflicts and processes which relate to judgement and management skills.

If in the future the possibility of entering multiple answers to questions associated with the nodes is added to SIENA, then it will be a huge step forward for the development of students' cognitive processes.